Semi-Active Suspension System for Full Spring Mounted Tractors

Not only the driving and operating speed of agricultural tractors but also the ratio of transport is increasing constantly. Because of that, higher driving safety and improved driving comfort are required. To achieve this, tractor chassis suspension has to be matched.

Based on a tractor with conventional rigid axles a new hydropneumatic chassis suspension for front and rear axle was developed, including a set of sensors, hydraulic actuators and an electronic controller. Multi-body simulation and control engineering models were used to design the controller of the semi-active suspension system, which rests upon the continuous Skyhook algorithm. Consequently, the chassis suspension can be adjusted to any kind of road and speed.

Possibilities of Hydropneumatic

- Front axle suspension or full suspension
- Passive, adaptive or semi-active control
- Variation of semi-active control strategy
- Variation of hydraulic charging pressure
- Automatic load leveling system
- Stabilization of roll and pitch movement
- Compensation of slope

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